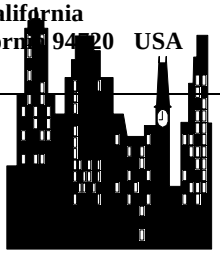
Building Energy Simulation

User News

For Users of the DOE-2, PowerDOE, SPARK and BLAST Programs

University of California
Berkeley, California 94720 USA



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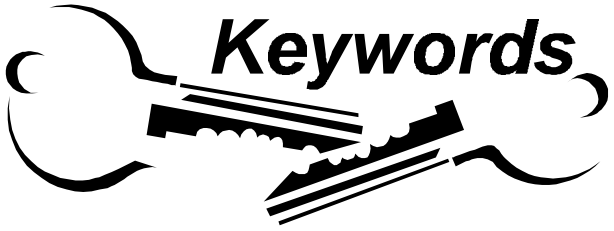

■ **DOE-2 and BLAST Unite** This is the first issue of a joint DOE-2/BLAST newsletter. It is part of the recently inaugurated DOE/DOD Best Of! effort to combine the best features of DOE-2 and BLAST into a single, more powerful program.

■ **User News on the Web!** Look for this and future issues of the newsletter at ***http://www.eande.lbl.gov/BTP/SRG*** , then choose the link to the User News.

■ **DOE-2 on the Menu!** Pacific Gas and Electric Company of San Francisco is offering lunchtime seminars on DOE-2. Please turn to p. 6 for a description of what's being offered.

■ **New Resource Center in Hong Kong** See p. 32.

■ **Fenestration R&D Newsletter** From the Windows and Daylighting Group at LBNL, it not only offers articles about windows and glazing but lists window-related software available from LBNL, a description of user facilities for collaborators, and reviews of recent research papers. To get on the free subscription list, please fax Pat Ross at (510) 486-4089. Or you can view and download *Fenestration R&D* from the Building Technology Program's web site http://eande.lbl.gov/BTP/BTP.html.

■ **RESFEN Revised** On page 31 of Volume 16, No. 3 of the User News, we wrote that the RESFEN program for fenestration systems was available free of charge from the National Fenestration Rating Council. This was incorrect. The NFRC charges a fee for preparation, packaging, and mailing of RESFEN; cost is $20 to NFRC members, and $40 for non-members. If you have questions please contact Susan Douglas of the NFRC at 301-589-6372, or E-mail nfrcusa@aol.

■ **International Weather Data** If you have international weather data that you're willing to share, please let us know. We're interested in compiling a list and making it available to other users.

■ **Free DOE-2 Help!!** Call or fax our resident DOE-2 expert, Bruce Birdsall, for questions about DOE-2 modeling. If you need to fax an example of your problem, please telephone him beforehand. This free service is supported by the Simulation Research Group. Contact Bruce at (510) 829-8459 between the hours of 10 a.m. and 3 p.m. PST.

■ **DOE-2 Training** Southern California Gas Company is sponsoring DOE-2 training, see p. 8. Also, on p. 27 there are three consultants who offer group or individual training

What's Inside??

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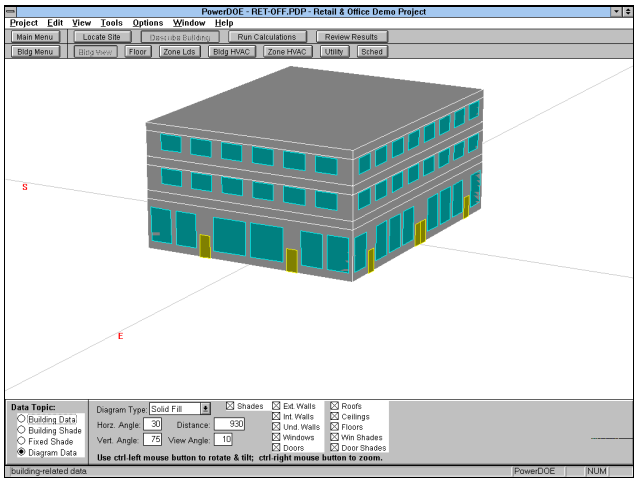
The User News is written by members of the Simulation Research Group at LBNL with submissions from program users; BLAST news is supplied by the BLAST Support Office at the University of Illinois. Direct comments or submissions to Kathy Ellington, MS: 90-3147, Lawrence Berkeley National Laboratory, Berkeley, CA 94720. Fax (510) 486-4089 or email kathy@gundog.lbl.gov. BLAST-related inquiries should be directed to the BLAST Support Office, phone (217) 333-3977, fax (217) 244-6534, or email support@blast.bso.uiuc.edu

Energy and Environment Division
Lawrence Berkeley National Laboratory

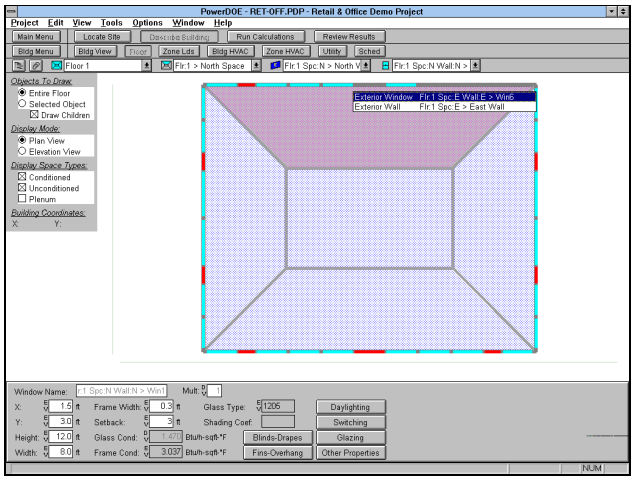
 This work was supported by the Assistant

A Sneak Peek At

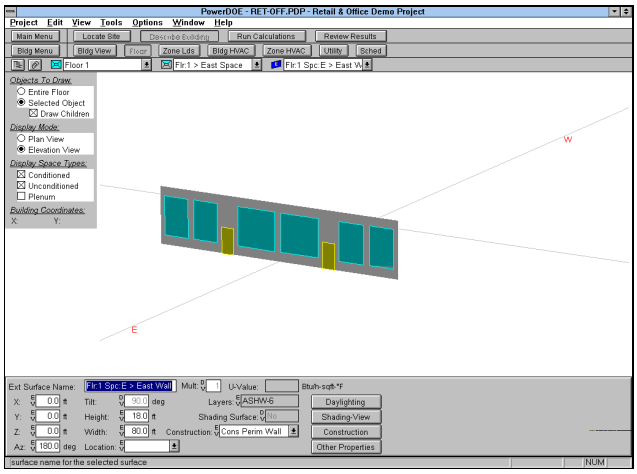
Beta testing will begin soon on PowerDOE, a new EPRI/DOE-sponsored version of DOE-2 that features a highly interactive, graphical user interface running under Microsoft Windows. PowerDOE is being developed by a team consisting of Hirsch & Associates, the LBNL Simulation Research Group, Regional Economic Research, the Southern Company, D.J. Borstein Associates and Energy Simulation Specialists. In addition to the user interface, which will make the program easier to use, PowerDOE (and its corresponding mainframe version, DOE-2.2) will include numerous calculation improvements, the most important of which is integrating the Systems and Plant programs into a single HVAC program built around circulation loops of hot water, chilled water and condensor water. To give you a feel for what PowerDOE will look like we show here a variety of the program's input screens.



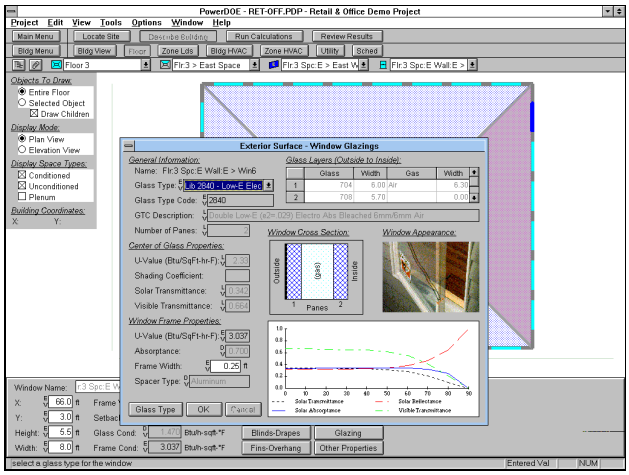
To help avoid misplacing building elements, 3-D view shows the walls, windows, doors and shading surfaces you have input. This view can be rotated, tilted and zoomed. Display of selected components, like roofs, can be turned on and off. Clicking on a particular element, like a window, takes you directly to its input screen. This view can also be shown in wire-frame or hidden wire form.



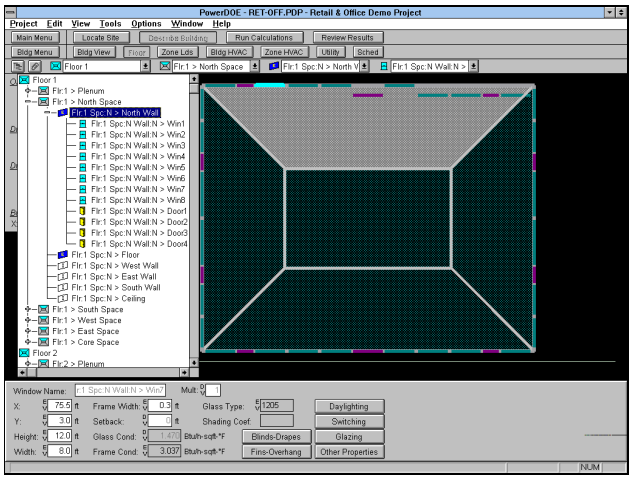
Spaces and their associated walls, windows and doors are entered in floorplan view. In PowerDOE walls, floors and ceilings can be triangles, trapezoids (like the perimeter floor sections shown here), or other polygons; in DOE-2.1E these were restricted to be rectangles. Clicking on an element allows geometry for that element to be entered at the bottom of the screen; clicking on buttons like "Daylighting" at the bottom allows additional data to be entered for that element. Choosing Elevation View on the left shows the elevation for the selected element (see next screen).



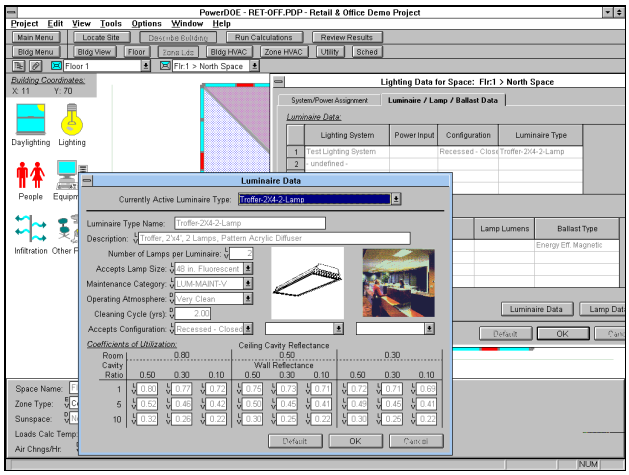
Elements selected in Floorplan View (previous screen) can also be shown in Elevation View. As with the Building View, this view can be rotated and zoomed.



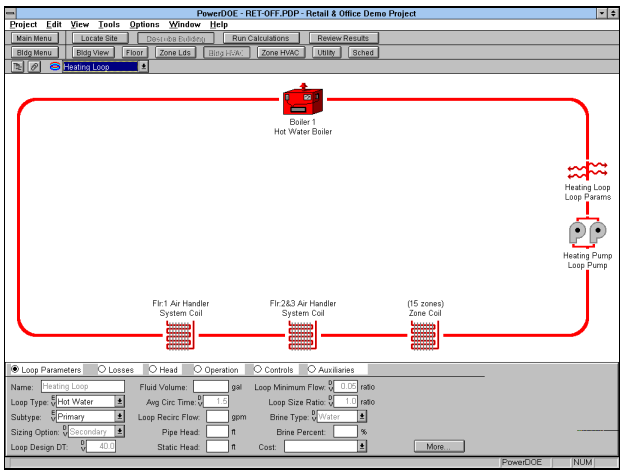
Detailed data for building elements is entered in dialogue boxes that pop up when you click on buttons at the bottom of the screen. Shown here is the Glazing dialogue. In this case a glazing has been selected from the library; the layer-by-layer construction of the window is shown, along with a graph of the transmittance, absorptance and reflectance vs. angle of incidence.



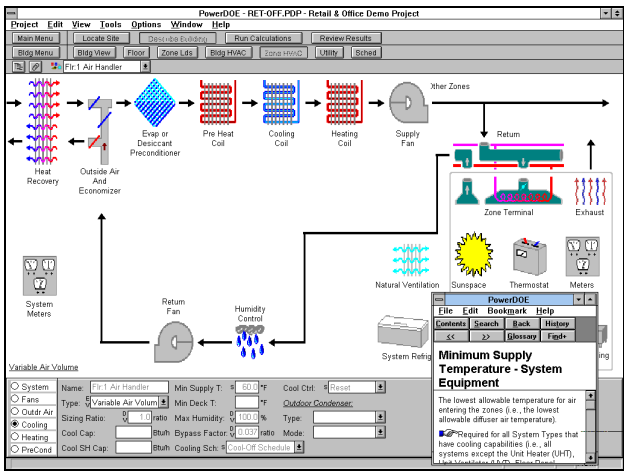
One way of navigating through the building is to use the Building Tree, shown at the left. The Tree shows all of the envelope elements arranged in a floor-space-wall-window hierarchy. The Tree can be expanded to show all of the elements or contracted to show only the floors. Clicking on an element in the Tree takes you to that element's input screen.



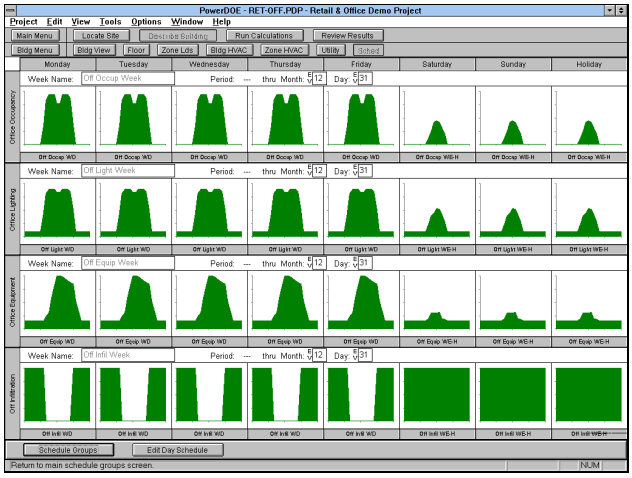
On the Zone Loads screen you enter information on internal gains, lighting and infiltration. In PowerDOE a lighting system can be specified by selecting luminaires and lamps from a library. The program then calculates connected power and workplane illuminance. Alternatively, the program will calculate the number of luminaires required to meet a specified illuminance setpoint.



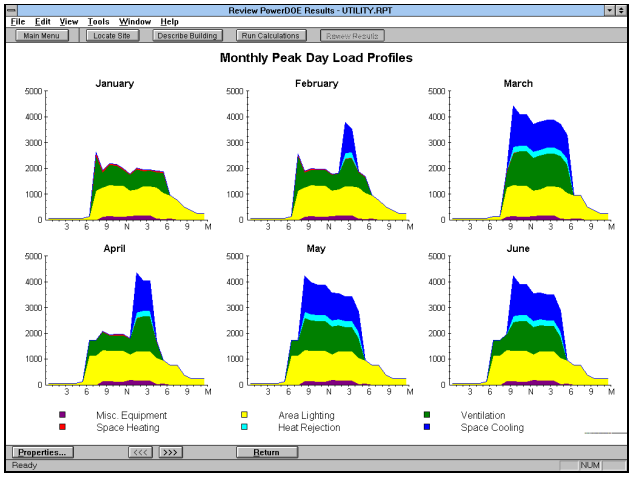
In PowerDOE the DOE-2 Systems and Plant programs have been combined into a single program, called "HVAC." In this program, primary and secondary system components are connected to circulation loops. This screen shows the hot water loop and its associated components. You can also specify circulation loops for chilled water, condenser water, DHW, and water loop heat pump.



When one of the 30 secondary system types is chosen in PowerDOE a schematic appears showing optional and required components. Clicking on a component allows data for that component to be entered. At the lower right, on-line help explains the meaning of a selected input item. This kind of on-line help is available for all PowerDOE screens.



Schedules for occupancy, lighting, infiltration, etc. can be selected by zone type from a library, displayed, and graphically edited. Modified schedules can be stored back in the library for reuse.



Any of the DOE-2 hourly or summary reports can be shown graphically. You can choose pre-formatted reports or assemble your own customized reports containing tables and graphs. The Windows Cut and Paste feature makes it easy to copy results graphics into other documents.

"Building Load Analysis and System Thermodynamics"

BLAST News

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U.S. Army Corps of Engineers
Construction Engineering Research Laboratory
Telephone: (800)UI-BLAST/(217)333-3977
FAX: (217)244-6534
E-Mail: support@blast.bso.uiuc.edu

WINLCCID 96 is here!

LCCID (Life Cycle Cost in Design) has been a standard in the Department of Defense (DoD) community since its initial release in 1986. LCCID was developed to perform Life Cycle Cost Analyses (LCCA) for the DoD and their contractors, yet it goes far beyond being just a DoD study tool by providing many features of a general purpose life cycle costing tool. With LCCID, it's easy to carry out "what-if" analyses based on variables such as present and future costs and/or maintenance and repair costs. LCCID allows an analysis based on standard DoD procedures and annually updated escalation factors as well as Energy Conservation

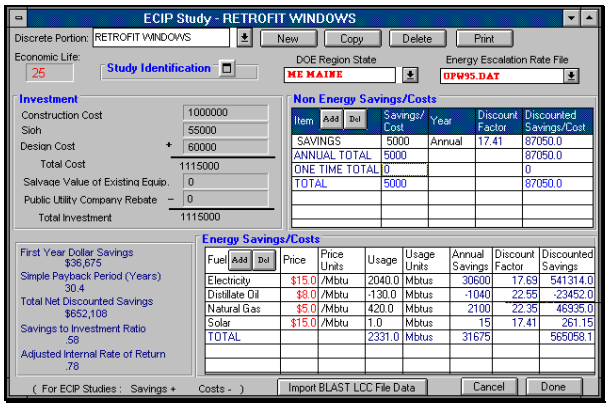
Investment Program (ECIP) LCCA.

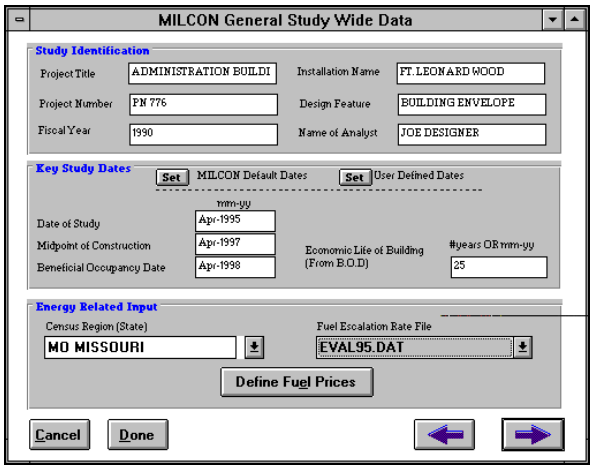
Now LCCID has been upgraded to take advantage of the popular Windows environment for the PC!

WINLCCID 96 uses a completely new navigation scheme (provided by a checklist) that helps new and infrequent users quickly input data and gives expert users the flexibility to jump between different menus with the click of the mouse. It even has a new on-line help feature which provides easy access to the latest program information. Check out the look of the new WINLCCID 96 interface:

WINLCCID 96 Features:

- Windows-based User Interface
- LCCID Calculation Algorithms
- Step-by-Step LCCA
- Advanced User Navigation
- Latest DoD Escalation Rates
- Tri-Service Specifications
- ECIP Compatible
- New Support Structure
- On-Line Helps
- Easy to Use





With its Windows interface, WINLCCID is **the** tool for the economic analysis of buildings. Following an intuitive step-by-step input structure, WINLCCID 96 can help you generate reports to the screen or printer in **minutes**. Editing existing study files is easy, too. **Order WINLCCID 96 today!** The purchase price for this release is $295; the update for LCCID Level 92 users is $195. To order your copy of WINLCCID 96 or to obtain more information on the program, please contact the BLAST Support Office or you may **download a free demo copy** of WINLCCID 96 from the BLAST home page (http://www.bso.uiuc.edu) on the world-wide web.

Pacific Gas & Electric Company's "Lunch Series"

...*and DOE-2 is the Entree!*

The DOE-2 Lunch Series is a user group forum co-sponsored by the Pacific Gas & Electric (PG&E) Energy Center and Lawrence Berkeley National Laboratory (LBNL). This series of lunchtime presentations provides participants with information to unlock the power of the DOE-2 building simulation program and introduces innovative applications and products. Each session will start with a one hour presentation followed by an hour of informal interactive problem-solving with participants.

Participants may bring their own lunch or order a boxed lunch for $10.00 from the PG&E Energy Center. If you plan to order a lunch, you must do so at least one week prior to that session. DOE-2 Friday Lunch Series attendance is limited to 75 participants.

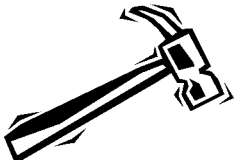
All programs are offered on site at the PG&E Energy Center at 851 Howard Street (between Fourth and Fifth) in San Francisco. For more information or to register, phone (415) 973-7268 or (415) 973-2277 For additional information or future program suggestions please contact Mark Hydeman at (415) 972-5498 (MMH0@pge.com) or George Loisos at (415) 972-5341 (GAL0@pge.com).

January 26	12:30-2:30	Visual DOE (2.0): a front end utility fully compatible with DOE-2.1E. Presenter: Charles Eley - Eley Associates
February 23	12:30-2:30	Chiller Plant Performance Curves: tools to develop chiller and tower curves from manufacturer's data. Presenter: Mark Hydeman - PG&E Energy Center
March 22	12:30-2:30	PowerDOE: an early look at the next generation from the project lead. Presenter: Jeff Hirsch - Hirsch & Associates
April 19	12:30-2:30	Applying Functions: how to get what you want from the program even if it's not available. Presenter: Joe Huang - LBNL
May 17	12:30-2:30	Applying Macros: how to automate simulations and use calculated values for building descriptions. Presenter: John Kennedy - Eley Associates
June 14	12:30-2:30	Micellaneous DOE-2 Tools and Add-Ons: including a residential tool for assessment of thermal performance during heat storms, a link to AutoCad and perhaps others. Presenter: Joe Huang - LBNL

Other PG&E Building Energy Efficiency Programs of Interest

Lighting Programs	March 20	Doing Commercial Lighting Surveys and Retrofits
	March 26	Data Collection Workshop: Commissioning Lighting Controls
	April 24	Warehouse and Industrial Lighting
	May 22	Calculations and Economics for Lighting Systems
	June 12	Evaluating Lighting Control Systems
HVAC Programs	April 23	CFC Management and Chiller Plant Optimization
	May 21	Data Collection Workshop: Commissioning HVAC Controls
	June 18	VAV Fume Exhaust Retrofits
Architectural Programs	March 15	An Architect's View of the Sun: Solar Geometry
	March 19	Passive Solar Design
	April 25	Building Loads and Systems, Part I
	April 26	Building Loads and Systems, Part II

E2BB: TRANSLATE INPUT OF DOE-2.1E TO BDL BUILDER



by
Gene Tsai, P.E.
Acrosoft International, Inc.

As promised, Acrosoft has created the E2BB program, which translates input of DOE-2.1E to BDL Builder - a reverse process of BDL Builder that generates DOE-2.1E input [**BDL Builder**, see User News, Vol. 16, No. 2]. This is great news to all existing DOE-2 users. With the E2BB program, you can switch your DOE-2 project to BDL Builder without re-entering your BDL input for current or existing projects. You can use the more powerful windows tool, BDL Builder, instead of the less-efficient editor/ word-processor approach. You can instantly enrich your BDL Builder library by disassembling existing DOE-2 input to BDL Builder database.

Design of E2BB

The E2BB program is composed of two sub-programs. The first is a DOS-based C program which reads DOE-2.1E input and translates it into table-like records. The second is a database program that reads the table-like records and transfers them to database tables.

There are basically two different kinds of databases for each DOE-2 module. First is the database of libraries, with a library for each command of BDL input, such as Schedule, Window, etc., or over 50 libraries in all. The E2BB program will transfer the command *uname*s (if any) and values to the database tables. *Uname* will become the record name of a table and values saved under the proper field names (keywords) of a table. The second database is associated with the *uname*s selected (such as input from the Builder menu option of BDL Builder) and other input data for use to compose a complete input for the module. An additional database is required for the SPACE commands of the LOADS module which contains all wall, window, and door data.

In the translation process, we had to consider two special cases. One consideration was if there was no *uname* associated with a command. Because each record represents an entry and needs a record name to distinguish it from other records, the program will now generate a unique name for each entry. The second case we considered was how to make allowances for those times when an input value for a keyword is longer than the size of the field allowed. We simply used the snippet feature of BDL Builder to take care of this. We saved the keyword/value pair to a snippet as it is, so that BDL Builder will be able to echo back the exact syntax when generating the BDL input.

Use of E2BB

The purpose of the E2BB program is to translate DOE-2.1E input to BDL Builder input. After conversion, you will be able to edit the project through BDL Builder and utilize all the library entries for other projects. Legal DOE-2.1E files accepted by the E2BB program do not need to be complete input of a module; but they do have to contain legal commands supported by each module. For example, BUILDING-RESOURCE is no longer in the LOADS module; therefore, you will get an error if your LOADS module includes this command. The only portion of input that does not transfer to BDL Builder is comment. This was in order to conserve development costs.

Run of E2BB

Running the E2BB program is very simple. First, starting from the DOS prompt, copy the

DOE-2.1E input file to the E2BB sub-dirctory, which is created during installation. Second, in the E2BB sub-directory, type "CV_STEP1" to run the DOS program. After the DOS execution finishes, a text file is created called CHECK_IT.1ST. The purpose of this text file is to verify any duplications of u-names. Second, go to Windows and click on the E2BB icon to activate the windows program to process table-like records and update BDL Builder database tables. The first sub-program runtime is very short; the second sub-program runtime of the database program takes longer, depending on the length of the input. If there are no errors, then you are ready to run or modify input from the BDL Builder. It's that simple!

You can purchase the E2BB program for $45 per package, or you can send your input files to us and we will process them at $75 per hour (minimum one hour), whichever you prefer.

Update of BDL Builder

Since the first release of BDL Builder, we have recompiled the program with the latest version of the FoxPro database program, Visual FoxPro 3.0, an object-oriented compiler. The new version allows longer field names, so now the input tables have long keyword field names instead of the previously abbreviated ones. We are sure you will like the improvement. With the new version, you can use the APPEND RECORDS feature, provided with the Table menu option, to append records of the same kind of library from a different project directory. To add more incentive to adapt BDL Builder as your DOE-2 preprocessor, we are making a special limited offer: if DOE-2.2 is released before June 30, 1996, you will receive BDL Builder for DOE-2.2 FREE and you pay only for shipping and handling - IF YOU PURCHASE BDL
BUILDER BEFORE FEBRUARY 29, 1996.

For more information on E2BB or BDL Builder, please call or write to:

Acrosoft International, Inc.
Suite 220
3435 South Yosemite Street
Denver, Colorado
80231
Tel: (303) 696-6888
Fax: (303) 696-0388
Email: 102447.2611@compuserve.com

DOE-2 Training

DOE-2 training classes are being offered by Southern California Gas Company at their Energy Resource Center, 9240 East Firestone Blvd., Downey, California 90241. For additional information, please fax (310) 803-7551 or call (310) 803-7500.

May 8, 1996	*Building Energy Simulation: Selecting the Right Tool* (Event #1116) Speaker: Marlin Addison Time: 8:30 a.m. to 3:30 p.m. Fee: $395 Limit: 90 people
June 19-20, 1996	*PowerDOE Training* (Event #1120) Speaker: Marlin Addison Time: 8:30 a.m. to 5:00 p.m. Fee: $395 Limit: 20 people

VisualDOE-2.0

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Floor 2
142 Minna Street
San Francisco, CA
94105

VisualDOE-2.0 is a second-generation Windows ™ application that enables architects, engineers, energy analysts and utility personnel to quickly evaluate the energy savings of building design options. The program uses the DOE-2.1E hourly simulation tool as the calculation engine so that energy use and peak demand are evaluated on an hourly basis. In the past, the use of DOE-2 has been limited to energy experts. The program is designed so that future versions of DOE-2 or other programs can become the calculation engine.

The VisualDOE-2.0 Windows interface is truly graphic. Pictures of your building and HVAC system diagrams are produced as you create your model. You can verify that your model is accurate and immediately see the size and shape of thermal zones, windows and other building elements. Information is organized by objects that are familiar to designers. To modify the properties of an object, you simply click on the object and a form will appear showing you the current properties and enabling you to make necessary modifications.

Version 2.0 is much more powerful than the first version of VisualDOE [**VisualDOE 1.0**, see User News, Vol. 15, No. 2]. Complex building shapes can be created by dragging and dropping a library of shapes on up to ten plan levels. Each plan shape (or block) can have one of several standard zoning patterns, or a block can be divided into custom zones. DOE-2 input files are easier to understand since they do not use macros. And, diagnostic features are improved.

VisualDOE can be used effectively by the international community. You can eliminate time-consuming conversions and use either inch-pound or SI (metric) units. The VisualDOE library can be modified to include special holidays, schedules, equipment templates and other information unique to a particular country or region of the world. Specifying equipment is simplified through the use of templates, which can be created and edited with the Equipment Editor program module. In many cases an entire piece of equipment such as a chiller, boiler, or cooling tower can be specified by making a single choice in the templates list box.

Each project file contains information about the basecase design as well as information about up to 20 design alternatives. Design alternatives can be quickly created from the basecase or one of the other design alternatives. If you know the construction cost associated with each of the design alternatives, VisualDOE will calculate the life-cycle cost of each one. A single run, all runs, or a selected group of runs can be run in a single batch. Advanced users can edit the DOE-2 input files to include modeling features not supported by the graphic interface.

Scheduling building operation patterns is vastly simpler than using DOE-2 directly. You can choose an occupancy type from the library and all the schedules and other information associated with that occupancy type is applied. The Schedule Maker program module can be used to create new schedules and combine these into occupancies.

The program is supported by an on-line help system that explains how to use the program and gives details about information needed to perform a simulation. The help system is context-sensitive,

providing immediate information about the form displayed on the screen. Error checking is provided after you enter information in each field. If the information is outside an acceptable range or is of the wrong data type (date, numeric, alpha, etc.), a warning appears with information about how to correct the error. VisualDOE starts you with a set of reasonable defaults. These are generally consistent with the DOE-2 defaults, but sometimes depend on other data you have entered. The help system also contains explanatory information about the DOE-2 reports.

In addition to the reports generated by DOE-2, VisualDOE generates five additional reports that summarize information about your model(s) and present the results. Diagnostic information is provided to help assure that your results are reasonable. A Run|Diagonostics form presents average temperatures of each space, the hours that the space is cooler than the heating setpoint or warmer than the cooling setpoint. It also summarizes total and outside air volumes to each space. If a simulation fails, diagnostic information is written to a LOG file. Finally, there is the BDL report which has diagnostic errors, warnings and cautions from DOE-2. In addition to the on-line help system, the program is supported by a User's Manual and technical assistance is provided to all users.

Overview of Program Modules

VisualDOE-2.0 includes seven program modules: Graphic Editor, Plant Only runs, Schedule Maker, Constructions Builder, Fenestrations Editor, Climate Editor, Utility Rates Editor, and Equipment Editor. Following is a brief description of each of the program modules.

- The **Graphic Editor** is the backbone of VisualDOE-2.0. It can be used to create a basecase model and up to 20 design alternatives. The Graphic Editor uses the concept of blocks which you can vertically stack to create complex building shapes. You can choose from several standard zoning arrangements or create your own custom zoning for each block. As you create your model, plan and elevation views are drawn so what-you-see-is-what-you-get.
- The **Plant Only Runs** module allows you to choose from a library of predefined load profiles and only simulate the performance of central plant alternatives.
- The **Schedule Maker** is used to create patterns of building operation. With this tool you can use graphic metaphors to describe how people come and go, how lights and equipment will be operated, what temperatures will be maintained and how outside air will be brought into the building. Day schedules can be created for lights, equipment, people, etc. These can be combined into annual schedules. Annual schedules can then be associated with an occupancy. Schedule maker also allows you to create non-USA holiday schedules; international users will find this a delight.
- The **Constructions Builder** enables you to edit and create wall, roof, and floor constructions. Constructions may be built up as layers of materials and stored in the library. Once a construction is created and added to the library, it will be available in list boxes in the Graphic Editor and other program modules.
- The **Fenestrations Editor** is used to review and extend the list of fenestration constructions in the library. The Fenestrations Editor works with the VisualDOE library file, but also with the W4Lib.dat file which is used by DOE-2. Fenestrations Editor will read Window 4.1 files and display summary information on the screen. You can then add the file to the library and to W4Lib.dat.
- The **Climate Editor** is used to add, delete or modify the climates in the library. Each climate has a weather file associated with it as well as cooling and heating design day information that can be used for equipment sizing.

- The **Utility Rates Editor** is used to create utility rates. The editor supports time-of-use rates, demand charges, monthly charges, block structures, kWh/kW ratios, multiple seasons and many other utility rate features. Once data has been entered and stored in the library, the newly created utility rate will appear in the appropriate list boxes.
- The **Equipment Editor** is used to add new equipment templates to the library or to modify equip- ment templates already in the library. Choose an equipment type, chiller for example, and all the chiller templates in the library are displayed in a list box. Double click on one of the templates, and a form allows you to define the template properties. An especially powerful and advanced feature of the Equipment Editor is the ability to create part-load curves for specific pieces of equipment.

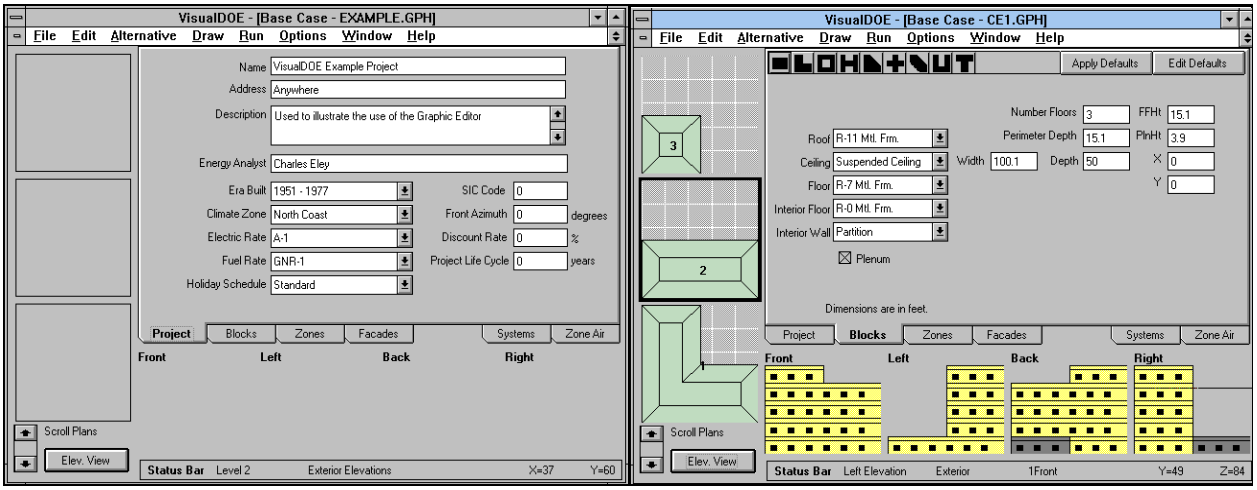
Cost and Availability

The program was released January 16, 1996 after two months of testing. The liscensing fee is $950. The upgrade cost for Version 1.0 users is $450. A demonstration version of the program is available for $30 (plus shipping). The demonstration version does everything but produce DOE-2 input files and make simulations. Contact Eley Associates, 142 Minna Street, San Francisco, CA 94105. Telephone (415) 957-1977. Fax (415) 957-1381.

Minimum System Requirements

- 486 compatible computer with color monitor and mouse.
- Windows 3.1 or higher.
- 8 mb random access memory (RAM).
- 30 mb disk space.

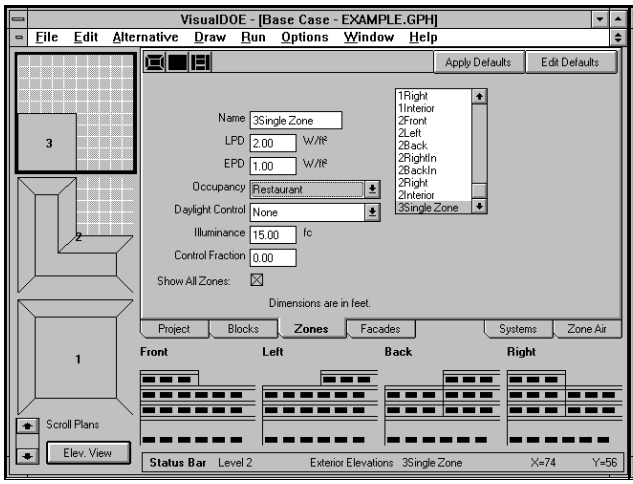
Enter General Information **Construct the Block Model**



Enter general project information such as name, address, description and energy analyst. Select the era when the building was constructed and VisualDOE will set defaults based on this and other information. Choose a climate, electric rate, fuel rate and holiday schedule from the choices in the library. Enter the azimuth of the front of the building.

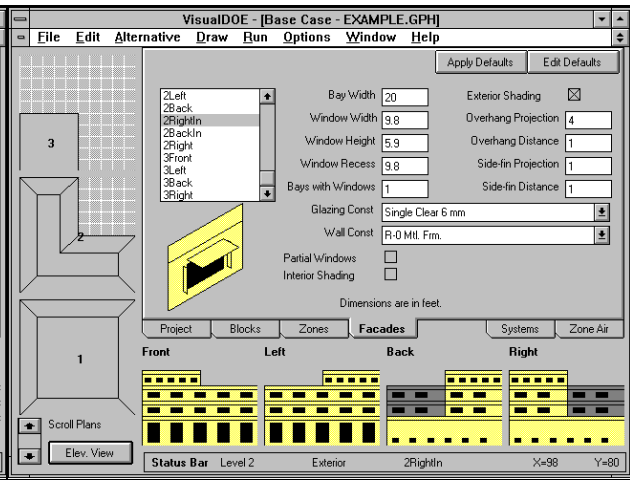
Drag and drop block shapes from the tool bar to up to ten levels or plan views. Dimension each block and enter the number of stories. Choose roof, ceiling, floor and interior floor construction from the library. Move blocks by assigning X and Y values. See your model take shape through elevation and plan views.

Create Zones



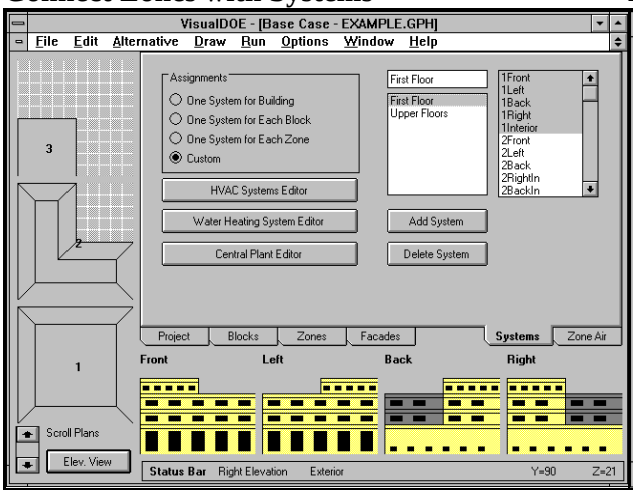
Drag and drop one of three zoning patterns on each block: (a) perimeter + interior zoning, (b) single zone, or (c) custom zoning. Select one or more zones from the list box and assign properties such as occupancy, lighting power, etc. Combine zone pieces to build up custom zones.

Define Windows



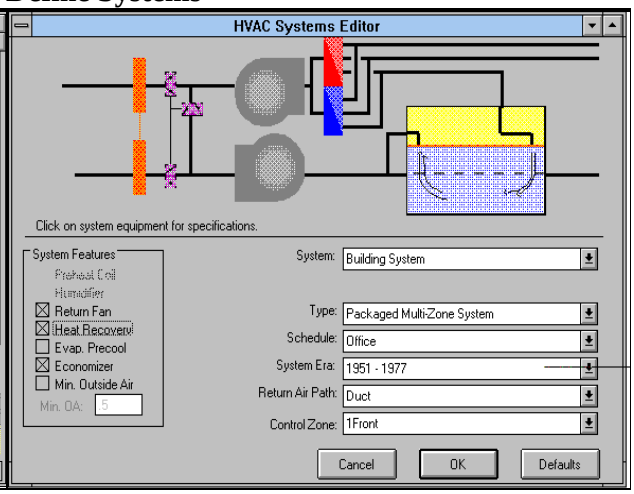
Select one or more facades from the automatically generated list box. Divide the selected facade(s) into bays (each bay can have a window). Dimension each typical window, select a glazing and wall construction from the library, specify exterior shading such as overhangs and/or sidefins, and indicate if the window has blinds or some other form of interior shading. See the

Connect Zones with Systems



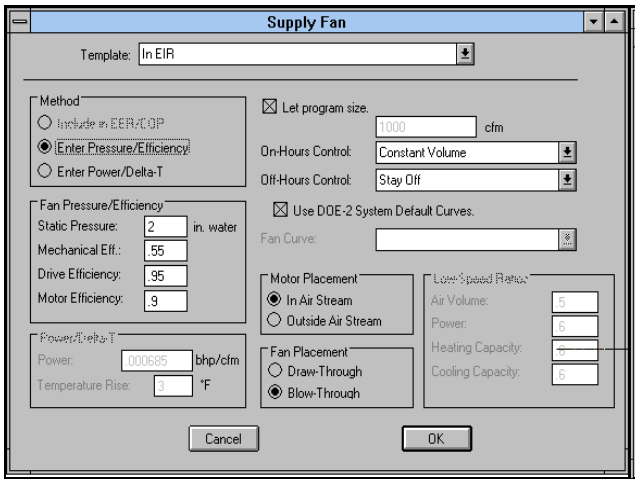
Select one of three standard system/zone assignments, or drag and drop zones to create custom zone assignments. Define the selected system by clicking the Define System command button. Define the central plant by clicking the Define Plant command button. Define the water heating system by clicking the X Water Heating System Editor command button.

Define Systems



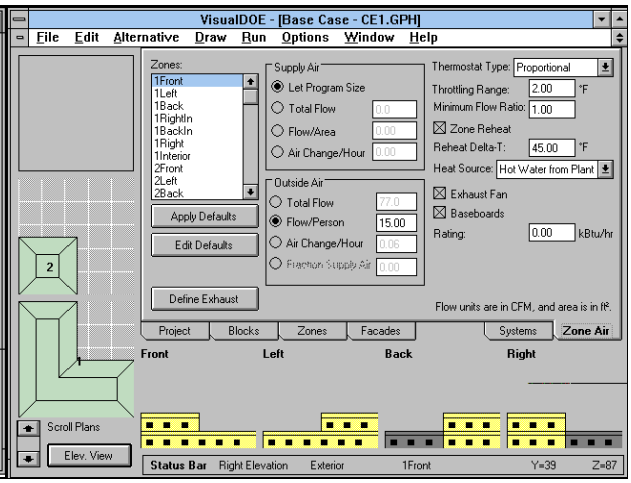
In the HVAC System Editor, choose the system Type from the drop-down box. Add features by clicking on the check boxes. Click the Defaults button to initialize system properties based on the area served by the system, the construction era, and other factors. Modify default properties by clicking on system components such as the supply fan, return fan, etc.

Define System Equipment



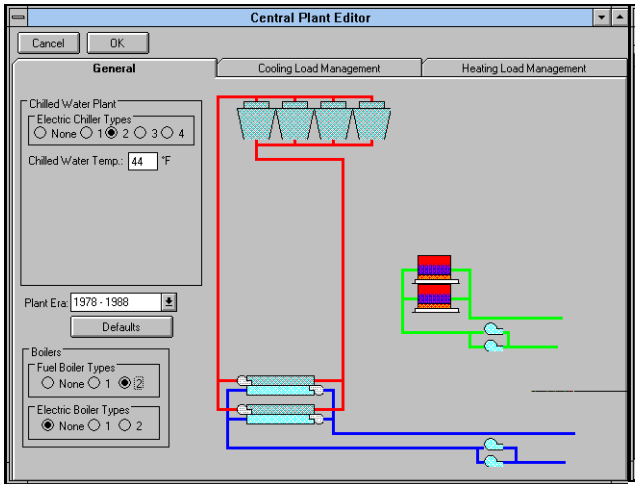
Click on a system component, the supply fan for instance, and a form will appear where you can review and edit its properties. You can set all properties at once by choosing a template. VisualDOE checks data as it is entered. Information that is not applicable is "greyed out" or made invisible so you know you can skip over it.

Specify Air Quantities



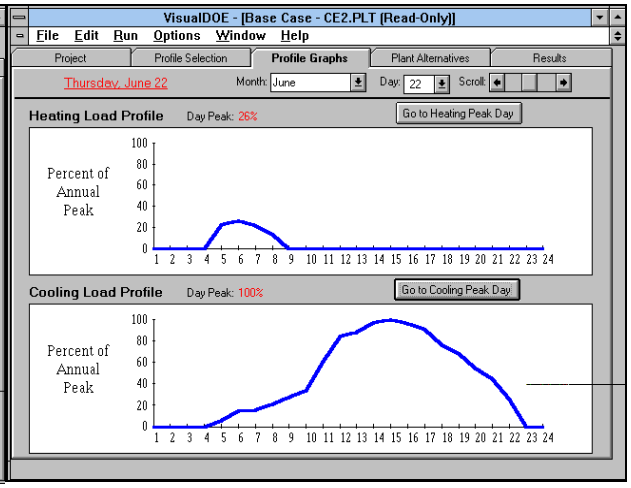
Let the program calculate the necessary supply air or enter fixed air quantities. Specify outside air in one of four ways. Define the thermostat type, type of zone reheat, supply air, outside air and other properties. Special equipment such as power induction units (PIU) and exhaust fans are defined by clicking command buttons.

Define the Central Plant



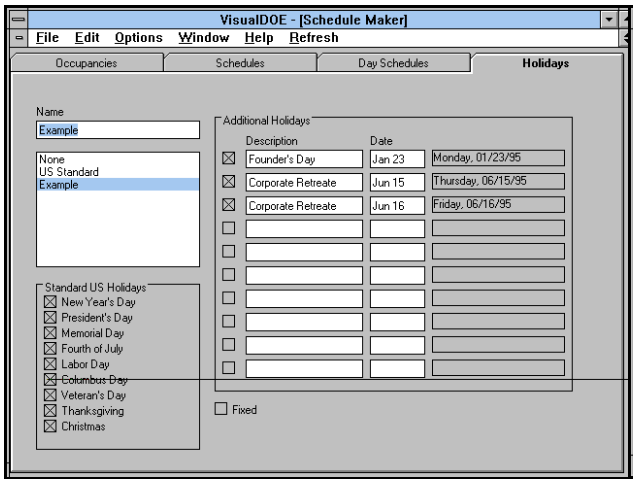
In the Central Plant Editor, a diagram of the plant appears showing each piece of equipment. Click on a plant component and a form will appear where you can review and edit its properties. Templates can be used to define all the equipment properties at once, including custom part load curves. Specify the sequencing of equipment with the Chiller Control and Boiler Control buttons.

Plant Only Runs



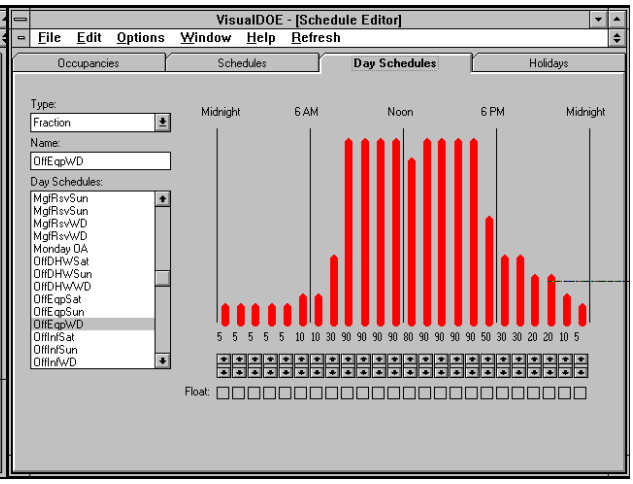
Skip building a loads and system model and choose a standard set of load profiles from the library. Create your own load profiles through the Graphic Editor. Create a basecase central plant and up to about 20 design alternatives. Evaluate these quickly (only plant and economics needs to be run).

Create Holiday Sets



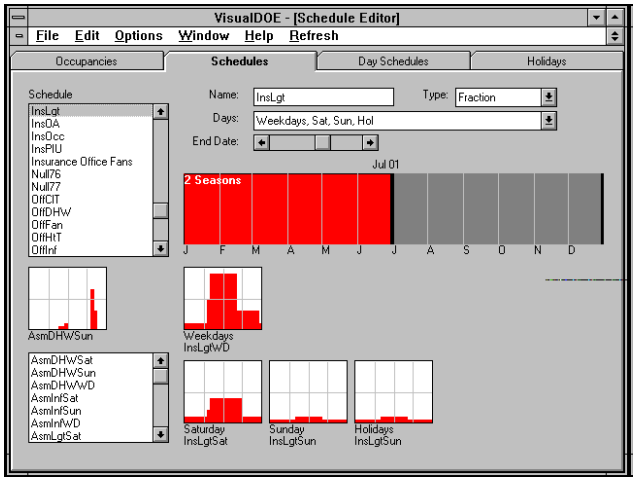
Give the new holiday set a name which will appear in list boxes in the Graphic Editor. Turn on/off the standard holidays that you want to observe. Add additional holidays by clicking the checkbox, adding a description, and entering a date. The day of the week is displayed for the date you enter.

Define Day Schedules



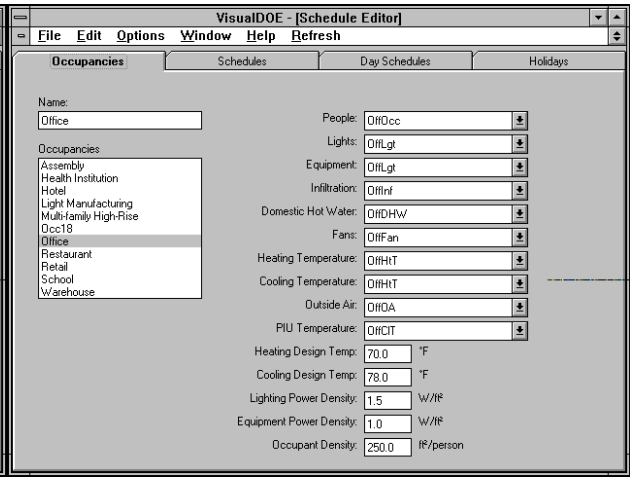
Create a day schedule by choosing Edit|Add New. Choose a schedule type. The choices are fractional, on/off and temperature. Give the new day schedule a name. Assign values for each hour of the day by clicking the scroll bars or checkboxes.

Build Schedules



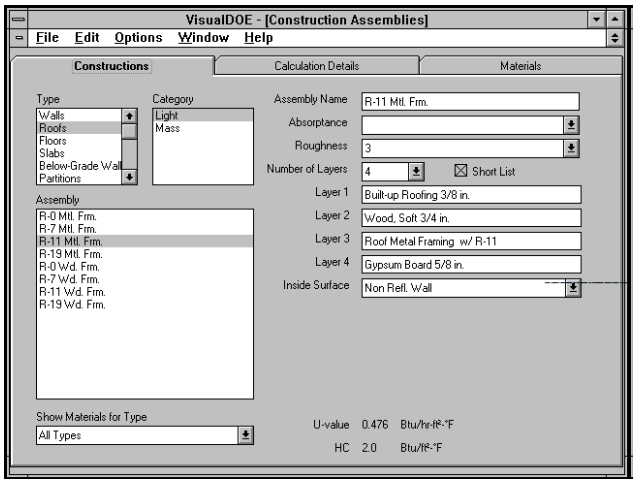
Break the year into seasons by choosing Edit|Season|Add New. Set the end date for each season by using the scroll bar or by dragging with the mouse. Choose the pattern of days by selecting from the Days drop-down list box. Choose a schedule type. The choices are fractional, on/off and temperature. Drag and drop a day schedule for each day type.

Make Occupancies



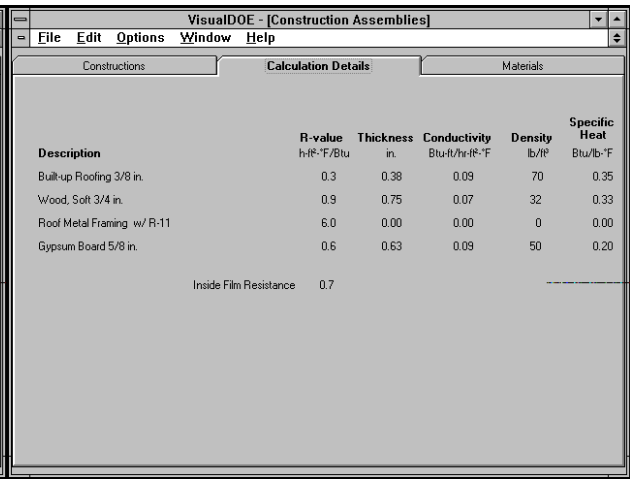
Create an occupancy by choosing Edit|Add New. Give the new occupancy a name which will appear in list boxes in the Graphic Editor. Select a schedule for people, lights, equipment, etc. You choose only from the appropriate schedule types. Assign default information for design temperatures, power densities and occupant densities.

Construction Assembly



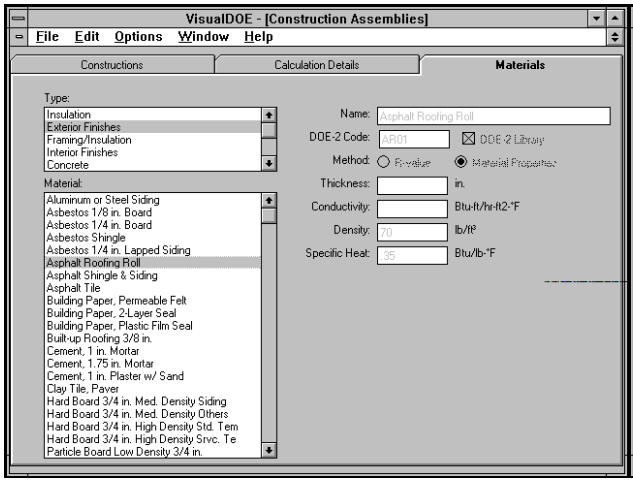
Give the construction a name and assign a category. Choose the number of layers. A text box will appear for each layer. Select a material for each layer. You can filter the materials that appear in the list by using the "Show Materials for Type" control.

Details



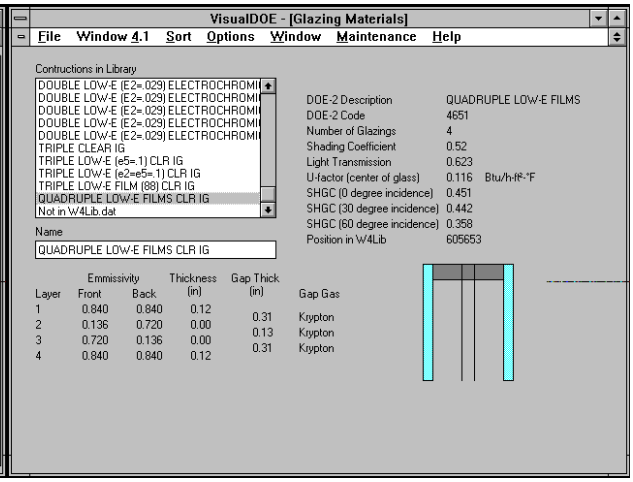
View the U-factor calculations and other details of the construction you have entered.

Materials



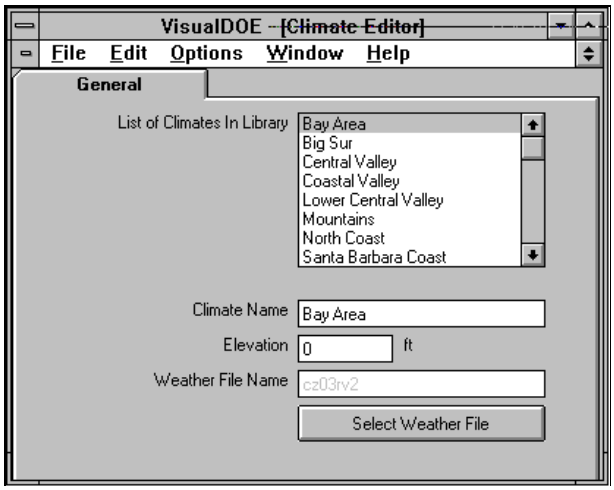
Add New materials by choosing Edit|Add New Standard materials can only be edited after entering a password. Define the material by either entering an R-value or by specifying its material properties.

Fenestration Editor



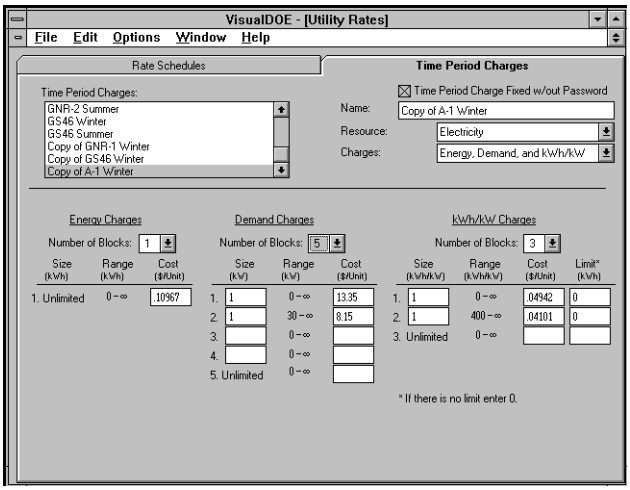
Select a fenestration from the list box and all its properties will be displayed as they appear in the W4Lib.dat file. Information is enhanced with a sketch. Add a new fenestration to the library by choosing Window 4.1|Read File. Choose Window 4.1|Add to Library and the construction will be added to W4Lib.dat and appended to the VisualDOE library.

Climate Editor



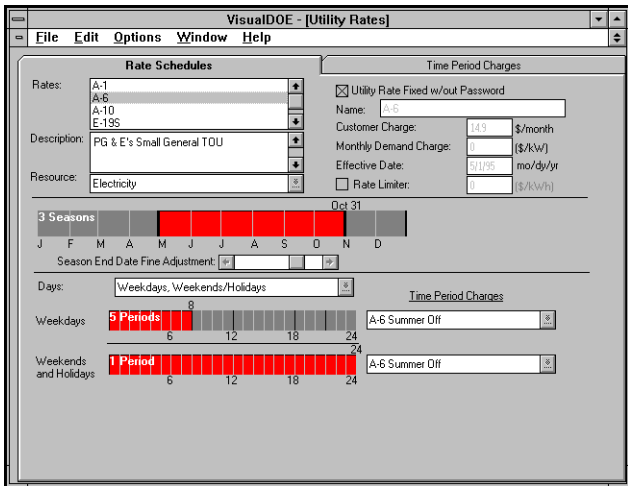
Add new climate by choosing Edit|Add New. Give the new climate a name and enter the elevation (used in air flow calculations). Select a weather file. The file will be copied to the weather directory if it does not already exist there.

Create Time Charge Periods



Create new time charge periods by choosing Edit|Add New. Choose the resource type, e.g. electricity, gas, etc. Select the type of charges. The choices are energy and demand, energy only, etc. Separately define the charges for energy, demand and if applicable kWh/kW.

Combine into Utility Rate



Create new rate schedules by choosing Edit|Add New. Break the year into seasons. For each season, break the week into day types. Divide days into time-of-use periods if applicable. Choose Time Period Charges for each time period.

Index to the User News

Volume 1, No. 1 (August 1980) through Volume 16, No. 4 (Winter 1995)

KEY: The Index lists User News volumes, issues, and page numbers as follows: Title of the article, program version that was current when article appeared, then Volume, Number (No. 1=Spring, No. 2=Summer, No. 3=Fall, No. 4=Winter), and page number. For example, the entry Advanced Simulation (2.1C)...7:4,4-8 means that the article was entitled Advanced Simulation and it was printed when DOE-2.1C was the current version of the program; the article can be found in Volume 7:Number 4, on pages 4 through 8.

DOCUMENTATION

DOE-2 - ALL VERSIONS (program-general topics)

DOE-2 - ALL VERSIONS (program-specific topics)

DOE-2 DIRECTORY

Program Related Software and Services

Contact vendors for prices and ordering information

Mainframe and Workstation Versions of DOE-2

DOE-2.1D and 2.1E (Source code, executable code and documentation) For 2.1E DEC-VAX, Order #000158-DOVAX-02 For 2.1E SUN-4, Order #000158-SUN-0000 For 2.1D DEC-VAX, Order #000158-D6220-01 For a complete listing of the software available from ESTSC order their "Software Listing" catalog ESTSC-2. [See User News Vol. 16, No. 3, p. 21]	Energy Science / Technology- Software Center (ESTSC) P.O. Box 1020 Oak Ridge, TN 37831-1020 Phone: (615) 576-2606 Fax: (615) 576-2865 email:ESTSC@ADONIS.OSTI.GOV www: http://www.doe.gov/html/osti/estsc/estsc.html
FTI-DOEv2.1E (Source code and documentation) Combined source code package for both VAX and SUN versions of DOE-2.1E. Available on most distribution formats and for most operating systems (1/4" QIC tape, TK50 tape, 3.5" floppy, etc). Note: this is the distribution package only, no executables. Complete documentation for DOE-2.1E, digitally reproduced, spiral bound, and separated into multi-volume sets. [See User News Vol. 12, No. 4, p. 16]	Finite Technologies, Inc 3763 Image Drive Anchorage, AK 99504 Contact: Scott Henderson Phone: (907) 333-8933 Fax: (907) 333-4482 email: info@finite-tech.com www: http://www.finite-tech.com/fti/home.htmld

PC Versions of DOE-2

ADM-DOE2 ADM-DOE2 (DOE-2.1E) is compiled for use on 386/486 PCs with a math co-processor and 4MB of RAM. It runs in a DOS or Windows environment and is a highly reliable and tested version of DOE-2 which contains all of the 1994/95 enhancements to the program. The package contains everything needed to run the program: program files, utilities, sample input files, and weather files. More than 300 weather files are available (TMY, TRY, WYEC, CTZ formats) for the U.S. and Canada. [See User News Vol. 7, No. 2, p. 6]	ADM Associates, Inc. 3239 Ramos Circle Sacramento, CA 95827 Contact: Marla Sullivan, Sales Phone: (916) 363-8383 Fax: (916) 363-1788
CECDOEDC (Version 1.0A) A microcomputer version of DOE-2.1D with a pre- and post-processor designed strictly for compliance use within the State of California. It generates some of the standard compliance forms as output. Order P40091009 for the CECDOEDC Program with Manuals. Order P40091010 for the DOE-2.1 California Compliance Manual. [See User News Vol. 12, No. 4, p. 13]	MS: 13 -- Publication Office California Energy Commission P.O. Box 944295 Sacramento, CA 94244-

	2950 Phone: (916) 654-5106 www:http://agency.resource.ca. gov/cectext/ETEC.html

Caveat : We list third-party DOE-2-related products and services for the convenience of program users, with the understanding that the Simulation Research Group does not have the resources to check the DOE-2 program adaptations and utilities for accuracy or reliability.

PC Versions of DOE-2 (continued)

DOE-24/Comply-24 DOE-24 is a special DOE-2 release which is both a California-approved compliance program for the state's non-residential energy standards, and a stand-alone version of DOE-2.1E that includes a powerful yet easy-to-use input preprocessor. A demonstration program is available upon request. [See User News Vol. 12, No. 2, p. 2]	Gabel-Dodd Associates 1818 Harmon Street Berkeley, CA 94703-2416 Contact: Rosemary Howley Phone: (510) 428-0803 Fax: (510) 428-0324
DOE-Plus ™ DOE-Plus, a complete implementation of DOE-2.1D, is used to interactively input a building description, run DOE-2, and plot graphs of simulation results. Features include interactive error checking, context-sensitive help for all DOE-2 keywords, a 3-D view of the building that can be rotated, and several useful utilities. Also from ITEM Systems: **Demand Analyzer ™,** uses templates of building types and vintages to simplify DOE-2 input requirements. Online help feature. **Prep** ™**,** a batch preprocessor, ideal for parametric studies, that enables conditional text substitution, expression evaluation, and spawning of other programs. [See User News Vol. 11, No. 4, p. 4 and Vol. 13, No. 2, p. 54, and Vol. 16, No. 1, p. 28-32	ITEM Systems 1402 - 3rd Avenue, #901 Seattle, WA 98101 Contact: Steve Byrne Phone: (206) 382-1440 Fax: (206) 382-1450 email: byrne@item.com
EZDOE EZDOE is an easy-to-use PC version of DOE-2.1D. It provides full screen, fill in the blank data entry, dynamic error checking, context-sensitive help, mouse support, graphic reports, a 750-page user manual, extensive weather data, and comprehensive customer support. EZDOE integrates the full calculation modules of DOE-2 into a powerful, full implementation of DOE-2 on DOS-based 386 and 486 computers. [See User News Vol. 14, No. 2, p. 10 and No. 4, p. 8-14]	Elite Software, Inc. P.O. Drawer 1194 Bryan, TX 77806 Contact: Bill Smith Phone: (409) 846-2340 Fax: (409) 846-4367 email: 76070,621@compuserve.com
FTI-DOEv2.1E Highly optimized version of DOE-2.1E software, available for most computing systems. Current support: MSDOS and Windows 3.x, Windows NT, OS/2, RS/6000 (AIX), NeXT, SUN, UNIX (most systems). Call for platforms not listed. Documentation and weather files are available. Also FTI-DOEv2.1E source code, highly optimized and portable version; will compile for most systems. [See User News Vol. 12, No. 4, p. 16]	Finite Technologies, Inc 821 N Street, #102 Anchorage, AK 99501 Contact: Scott Henderson Phone: (907) 272-2714 Fax: (907) 274-5379 email: info@finite-tech.com

	www:http://www.finite-tech.com/ fti/ home.htmld

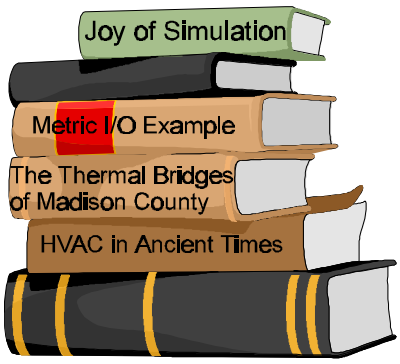
PC Versions of DOE-2 (continued)

MICRO-DOE2 MICRO-DOE2 (2.1E), which runs in a DOS or windows environment, is a widely used, reliable, and tested PC version of DOE-2. It includes automatic weather processing, batch file creation, and a User's Guide with instructions on how to set up a RAM drive. System requirements: 386/486 PC with 4 MB of RAM and math co-processor. Also from Acrosoft, International, Inc.: **NETPath**, a network edition of MICRO-DOE2, allows you to store and run DOE-2 application files on one machine using input files from another machine. The result is improved space usage and project file management. **POWERPath**, for single machines, allows you to keep MICRO-DOE2 application files in one directory and submit input from any other directory. **BDL Builder** , is a pre-processor for DOE-2.1E that allows you to describe specific building and HVAC characteristics by preparing databases, or building blocks , and then selecting records from the databases to assemble a complete input. **E2BB** translates DOE-2.1E text input to **BDL Builder**. [See User News Vol. 7, No. 4, p. 2; Vol. 11, No. 1, p. 2; Vol. 15, No. 1, p. 8; Vol. 15, No. 3, p. 4; Vol. 16, No. 2, p. 1,7; Vol. 16, No. 4, p. 7-8]	Acrosoft International, Inc. 3435 South Yosemite St., #220 Denver, CO 80231 Contact: Gene Tsai Phone: (303) 696-6888 Fax: (303) 696-0388 email: 102447.2611@compuserve.com
PRC-DOE2 A fast, robust and up-to-date PC version of DOE-2.1E. Runs in extended memory, is compatible with any VCPI compliant memory manager and includes its own disk caching. 377 weather data files available (TMY, TRY, WYEC, CTZ) for the U.S. and Canada Also from the Partnership for Resource Conservation: **PRC-TOOLS** , a set of PC programs that aids in extracting, analyzing and formatting hourly DOE-2 output. Determines energy use, demand, and cost for any number of end-uses and periods. Automatically creates 36-day load shapes. Custom programs also available.	Partnership for Resource Conservation 140 South 34th Street Boulder, CO 80303 Contact: Paul Reeves Phone or FAX: (303) 499-8611 email: paulreeves@aol.com
VisualDOE-2.0 for Windows ™ VisualDOE-2.0, which uses DOE-2.1E as the calculation engine, enables archi- tects and engineers to quickly evaluate the energy savings of HVAC and other building design options. Program is supported by context-sensitive on-line help. Program includes climate data for the 16 California weather zones. [See User News Vol. 15, No. 2, p. 10 and Vol. 16, No. 4, p. 9-16]	Eley & Associates 142 Minna Street San Francisco, CA 94105 Contact: Charles Eley or John Kennedy Phone: (415) 957-1977 Fax: (415) 957-1381

Pre- and Post-Processors for DOE-2

D O E 1 2 3 Uses Lotus 1-2-3 to graphically display DOE-2.1D output as barcharts, pie charts, and line graphs. [See User News Vol. 10, No. 3, p. 5]	Ernie Jessup 4977 Canoga Avenue Woodland Hills, CA 91364 Phone: (818) 884-3997
DrawBDL DrawBDL, Version 2.02, is a graphic debugging and drawing tool for DOE-2 building geometry; it runs on PC's under Microsoft Windows. DrawBDL reads your BDL input and makes a rotatable 3-D drawing of your building with walls, windows and building shades shown in different colors for easy identification. [See User News Vol. 14, No. 1, p. 5-7, Vol. 14, No. 4, p. 16-17, and Vol. 16, No. 1, p. 37]	Joe Huang & Associates 6720 Potrero Avenue El Cerrito CA 94530-2248 Contact: Joe Huang Phone/Fax: (510) 236-9238
Graphs for DOE-2 2-D, 3-D, hourly, daily, and psychrometric plots [See User News Vol. 13, No. 1, p. 5]	Energy Systems Laboratory Texas A&M University College Station, TX 77843 Contact: Jeff Haberl Phone : (409) 845-6065 Fax: (409) 862-2762
Pre-DOE A math pre-processor for BDL.	Nick Luick 19030 State Street Corona, CA 91719 Phone: (714) 278-3131

DOE-2.1E Documentation Update



Sample Run Book:
Metric Input/Output Example

Recently, it was brought to our attention that Section 13 of the DOE-2.1E Sample Run Book was missing. Sure enough, due to an error on our part Section 13, the Metric I/O Example, was never sent to the printer. If you would like a copy of this example, please fax your request to Kathy Ellington at (510) 486-4089 or send email to KLEllington@lbl.gov

R E S O U R C E S

User News (a quarterly newsletter) Sent without charge to DOE-2 and BLAST users, the newsletter prints documentation updates and changes, bug fixes, inside tips on using the programs more effectively, and articles of special interest to program users. Regular features include a directory of program-related software and services and an order form for documentation. The winter issue features an index of articles printed in all the back issues.	Simulation Research Group Bldg. 90, Room 3147 Lawrence Berkeley National Laboratory Berkeley, CA 94720 Contact: Kathy Ellington Fax: (510) 486-4089 email: kathy@gundog.lbl.gov
Help Desk Bruce Birdsall Call or fax Bruce Birdsall if you have a question about using DOE-2. If you need to fax an example of your problem to Bruce, please be sure to telephone him prior to sending the fax. This is a free service provided by the Simulation Research Group at Lawrence Berkeley National Laboratory.	Bruce Birdsall Phone and Fax: (510) 829-8459 Monday through Friday 10 a.m. to 3 p.m. Pacific Time
Training DOE-2 courses for beginning and advanced users. DOE-2 training for small groups and individuals.	Energy Simulation Specialists 64 East Broadway, Suite 230 Tempe, AZ 85282 Contact: Marlin Addison Phone: (602) 967-5278 Gary H. Michaels, P.E. 1512 Crain Street Evanston, IL 60202 Phone: (708) 869-5859 Norm Weaver Interweaver Consulting P.O. Box 775444 Steamboat Springs, CO 80477 Phone: (970) 870-1710
Instructional DOE-2 Video and Manual Takes you step-by-step in DOE-2.1D input preparation and output interpretation.	JCEM/U. Colorado Campus Box 428 Boulder, CO 80309-0428 Contact: Prof. Jan Kreider Phone: (303) 492-3915

DOE-2.1E Bug Fixes via FTP

If you have Internet access you can obtain the latest bug fixes to DOE-2.1E by anonymous ftp. The procedure is as follows:

ftp to either gundog@lbl.gov or to 128.3.254.10
login: *type* anonymous
passwd: *type in your email address*

After logging on, go to directory pub/21e-mods ; bug fixes are in files that end with **.mod** . A description of the fixes is in file **VERSIONS.txt** in directory **pub** . Each fix has its own version number, ***nnn*** , which is printed out as DOE-2.1E- *nnn* on the DOE-2.1E banner page and output reports when the program is recompiled with the fix. You may direct questions about accessing or incorporating the bug fixes to Ender Erdem (ender@gundog.lbl.gov).

R E S O U R C E S (continued)

Weather Data

Comprehensive collection of TRY, TMY and CTZ weather file libraries, from NCDC, which can be used on all PC versions of DOE-2. Includes original source data and pre-formatted packed versions on a single IBM format CD. For Canadian users, the CD contains five weather files representing the five climate regions established by the Canadian energy codes. Individual sites available.	Jenny Lathum or Martyn Dodd EnergySoft 100 Galli Drive, Suite 1 Novato, CA 94949 Phone: (800) 467-4738 Fax: (415) 883-5970
European Weather Files	Andre Dewint Alpha Pi, s.a. rue de Livourne 103/12 B-1050 BRUXELLES, Belgium Phone: 32-2-649-8359 Fax: 32-2-649-9437
TMY (Typical Meteorological Year) TRY (Test Reference Year)	National Climatic Data Center 151 Patton Avenue, #120 Asheville, NC 28801 Phone: (704) 271-4871 order Phone: (704) 271-4800 main Fax: (704) 271-4876
CTZ (California Thermal Climate Zones)	California Energy Commission Bruce Maeda, MS-25 1516-9th Street Sacramento, CA 95814-5512 1-800-772-3300 Energy Hotline
WYEC (Weather Year for Energy Calculation)	ASHRAE 1791 Tullie Circle N.E. Atlanta, GA 30329 Phone: (404)636-8400 Fax: (404)321-5478
Canadian Weather Files in WYEC2 Format [Note: the original long-term data sets, up to 40 years of data, from which the CWEC files were derived can also be obtained directly from Environment Canada. contact Mr. Robert Morris at (416) 739-4361.]	Dr. Didier Thevenard Watsun Simulation Laboratory University of Waterloo Waterloo, Ont., N2L-3G1 Canada Phone: (519) 888-4904 Fax: (519) 888-6197 watsun@helix.watstar.uwaterloo.ca

DOE-2 ENERGY CONSULTANTS

Consulting Engineers Charles Fountain Burns & McDonnell Engineers 8055 E. Tufts Avenue, #330 Denver, CO 80237 (303) 721-9292	**Consultant** Greg Cunningham Cunningham + Associates 512 Second Street San Francisco, CA 94107 (415) 495-2220
Consultant Philip Wemhoff 1512 South McDuff Avenue Jacksonville, FL 32205 (904) 632-7393	**Consultant** Jeff Hirsch 12185 Presilla Road Camarillo, CA 93012 (805) 532-1045
Consultants Charles Eley, John Kennedy Eley Associates 142 Minna Street San Francisco, CA 94105 (415) 957-1977	**Computer-Aided Mechanical Engineering** Mike Roberts Roberts Engineering Co. 11946 Pennsylvania Kansas City, MO 64145 (816) 942-8121
Consultant Steven D. Gates, P.E. Building HVAC Design/Performance Modeling 11608 Sandy Bar Court Gold River, CA 95670 (916) 638-7540	**Consultant** Donald E. Croy CAER Engineers, Inc. 814 Eleventh Street Golden, CO 80401 (303) 279-8136
Mechanical Engineers Chuck Sherman Energy Simulation Specialists 64 East Broadway, #230 Tempe, AZ 95282 (602) 967-5278	**Energy Engineering: Commercial & Institutional** Michael W. Harrison, P.E. 139 Bluebird lane Whitehall, Montana 59759 (406) 287-5370
Consultants Shiva Subramanya Criterion, Inc. 5331 SW Macadam Ave., Suite 205 Portland, OR 97201 (503) 224-8606	**Hourly Calibrated DOE-2 Analysis** Jeff S. Haberl Energy Systems Laboratory Texas A&M University College Station, TX 77843-3123 (409) 845-6065
Consultant/Building Systems Analysis Robert H. Henninger, P.E. GARD Analytics, Inc. 2070 Maple Street Des Plaines, IL 60018-3019 (847) 699-3252	**Energy Management Specialists** Hank Jackson, P.E. P.O. Box 675 Weaverville, NC 28787-0675 (704) 658-0298
Consultant Martyn C. Dodd Gabel Dodd Associates 100 Galli Drive, # 1 Novato, CA 94949 (415) 883-5900	**Consulting Engineers** Prem N. Mehrotra General Energy Corporation 230 Madison Street Oak Park, IL 60302 (708) 386-6000
Energy Consultants Gene Tsai Acrosoft International, Inc. 3435 S. Yosemite, Suite 220 Denver, CO 80231 (303) 696-6888	**Consulting Engineers/Computer Simulation Sciences** Robert E. Gibeault A-TEC 5515 River Avenue, Suite 301 Newport Beach, CA 92663 (714) 548-6836

DOE-2 E N E R G Y C O N S U L T A N T S (continued)

Consulting Engineers
Susan Reilly
Enermodal Engineering
1554 Emerson Street
Denver, CO 80218 (303) 861-2070

Technical Real World Analysis
David J. Schwed
Romero Management Associates
1805 West Avenue K, #
Lancaster, CA 93534 (805) 940-0540

Energy Simulation Consultant
Joel Neymark, P.E.
2140 Ellis Street
Golden, CO 80401 (303) 384-0307

Consulting Engineers
Gregory Banken, P.E.
Q-Metrics, Inc.
P.O. Box 3016
Woodinville, WA 98072 (205) 915-8590

Consulting Engineers
Chandra Shinde, P.E.
ENVIRODESIGN GROUP
385 S. Lemon Ave., E-266
Walnut, CA 91789 (909) 598-1980

Energy Engineering and Analysis
Leo Rainer
Davis Energy Group, Inc.
123 C Street
Davis, CA 95616 (916) 753-1100

Energy Codes DSM
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The Heshong Mahone Group
4610 Paula Way
Fair Oaks, CA 95628 (916) 962-7001

Consulting Energy Engineers
Gary H. Michaels, P.E.
1512 Crain Street
Evanston, IL 60202 (708) 869-5859

Consulting Engineer
Robert Mowris, P.E.
606 Pelton Avenue
Santa Cruz, CA 95060 (408) 454-0606

Energy/DSM-Consultants
Adrian Tuluca
Steven Winter Associates
50 Washington Street
Norwalk, CT 06854 (203) 852-0110

Modeling Specialist
Norm Weaver
Interweaver Consulting
P.O. Box 775444
Steamboat Springs, CO 80477 (970) 870-1710

Consultant/Building Systems Engineering
Ellen Franconi
1504 Grant Street
Berkeley, CA 94703 (510) 559-8340

Large Facility Modeling
George Marton
Consulting Engineer
1129 Keith Avenue
Berkeley, CA 94708 (510) 841-8083

Consultant Engineers
David A. Cohen
Architectural Energy Corporation
2540 Frontier Avenue, #201
Boulder, CO 80301 (303) 444-4149

Consultant
Kurmit Rockwell
Rocky Mountain Energy Services
1705 14th Street, Suite 401
Boulder, CO 80302 (303)499-7907

DOE-2 ENERGY CONSULTANTS INTERNATIONAL

Mainframe DOE-2 for European Users Joerg Tscherry EMPA, Section 175 8600 Dubendorf Switzerland	**Energy Consultant** Philip Schluchter Institut fur Bauphysik Klein Urs Graf-Strasse 1 CH4052 Basel Switzerland
Consultant, Distributor for FTI-DOEv2.1E Andre Dewint rue de Livourne 103/12 B-1050 BRUXELLES Belgium	**Consultant** Werner Gygli Informatik Energietechnik Weiherweg 19 CH-8604 Volketswil Switzerland
Consultant Curt Hepting, P.Eng. EnerSys Analytics 3990 Lynn Valley Road North Vancouver, B.C. V7K 2S9 Canada	**DOE-2 Simulation Specialist** René Meldem gb consult ag 30-A, Chemin de la Fauvette P.O. Box 106 CH-1012 Lausanne Switzerland
Energy and Environmental Engineering Neil A. Caldwell D. W. Thomson Consultants, Ltd. 1985 West Broadway Vancouver, BC V6J 4Y3 Canada	

DOE-2 RESOURCE CENTERS

The people listed here have agreed to be primary contacts for DOE-2 program users in their respective countries. Each resource center has the latest program documentation, all back issues of the User News, and recent LBNL reports pertaining to DOE-2. These resource centers will receive copies of all new reports and documentation. Program users can then make arrangements to get photocopies of the new material for a nominal cost. We hope to establish resource centers in other countries; please contact us if you are interested in establishing a center in your area.

South America
Prof. Roberto Lamberts
Universidade Federal de Santa Catarina
Campus Universitario--Trindade
Cx. Postal 476
88049 Florianopolis SC
BRASIL

Telephone: (55)482-31-9272
Fax: (55)48-231-9770
email: Lamberts@ecv.ufsc.BR

Australasia
Dr. Deo K. Prasad/P. C. Thomas
SOLARCH
University of New South Wales
P.O. Box 1
Kensington, N.S.W. 2033
AUSTRALIA

Telephone: (61)-2-697-5783 (P.C. Thomas)
Fax: (61) 2-662-4265 or -1378
email: PC.Thomas@unsw.EDU.AU

Portugal, Spain, Italy, and Greece
Antonio Rego Teixeira
ITIME
Unidade de Energia
Estrada do Paco do Lumiar
1699 Lisboa
PORTUGAL

Telephone: (351) 1-716-4096
Fax: (351) 1-716-4305
email: itime.ue@mail.telpac.pt

Australia
Murray Mason
ACADS BSG
16 High Street
Glen Iris VIC. 3146
AUSTRALIA

Telephone: (61) 885 6586
Fax: (61) 885 5974

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REPUBLIC OF SINGAPORE
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Fax: (65)791-1859
email: mywwong@ntuvax.ntu.ac.sg

Germany
B. Barath or G. Morgenstern
BARATH and WAGNER
Rudolf-Diesel-Strasse 2,
40670 Meerbusch
GERMANY

Telephone: (49) 2159 528041
Fax: (49) 2159 528043

Hong Kong, China, Taiwan, Japan and Korea
Dr. Sam Chun-Man HUI or K.P. Cheung
University of Hong Kong
Pokfulam Road
HONG KONG

Telephone: (852) 2859-2133 (direct to Sam Hui)
Fax: (852) 2559-6484
Email: CMHUI@HKUCC.HKU.HK

Switzerland
René Meldem
gb consult ag
30-A, Chemin de la Fauvette
P.O. Box 106
CH-1012 Lausanne
SWITZERLAND

Telephone: (41) / 21 653-5677
Fax: (41) / 21 653-2884
Email: 100713.3072@compuserve.com

DOE-2 PROGRAM DOCUMENTATION

DOE-2 documentation is available from several sources.

- The National Technical Information Service offers a complete set of DOE-2 manuals, available for purchase separately; prices and ordering information are below.
- Kinko's Copy Center of Berkeley offers the DOE-2.1E updated documentation (BDL Summary, Sample Run Book, and Supplement) as a set; their price includes shipping within the U.S.; see below
- The Energy Science Technology Software Center at Oak Ridge, TN, offers the DOE-2.1E updated documentation free of charge when you purchase the mainframe or workstation version of DOE-2. See the "DOE-2 Directory of Program Related Software and Services" in this issue.
- And finally, many of the PC vendors of DOE-2 offer some or all of the documentation when you buy their program. Names and addresses of all DOE-2 vendors are found in the "DOE-2 Directory of Program Related Software and Services" in this issue.

To order any or all of the DOE-2 manuals from the National Technical Information Service:

National Technical Information Service
5285 Port Royal Road
Springfield, VA 22161
Phone (703) 487-4650
FAX (703) 321-8547

Document Name	Order Number	Price
DOE-2 Basics Manual (2.1E)	DE-940-13165	44.50
BDL Summary (2.1E)	DE-940-11217	27.00
Sample Run Book (2.1E)	DE-940-11216	91.00
Reference Manual (2.1A)	LBL-8706, Rev.2	126.00
Supplement (2.1E)	DE-940-11218	91.00
Engineers Manual (2.1A) [algorithm descriptions]	DE-830-04575	52.00

To order the DOE-2.1E "update" documentation from Kinko's Copy Center in Berkeley, California:

Ms. Dani Aalfs
Kinko's Copy Center
901 University Avenue
Berkeley, CA 94710
Phone: (510) 204-0781
Fax: (510) 644-9704

"Update" documention includes the 2.1E BDL Summary, 2.1E Supplement, and 2.1E Sample Run Book.
Cost of the three manuals is $125 which includes any applicable taxes, shipping, and handling. For foreign

orders, please fax Ms. Aalfs to ascertain extra shipping costs. VISA, MasterCard.

World-Wide Web and Internet Sites for Building Energy Efficiency

(net) sci.engrg.heat-vent-ac	**HVAC** discussion group.
(net) sci.engrg.lighting	**Lighting** discussion group.
http://energy.ca.gov/energy/ cectext/ETEC.html	**California Energy Commission's Energy Technology and Education Center** . See User News , Vol. 16, No. 1, p. 42.
http://www.hike.te.chiba-u.ac.jp/ ikeda/CIE/publ/110-94.html	**The International Commission on Illumination - CIE .** See User News , Vol. 16, No. 1, p. 44.
http://www.eren.doe.gov/	**EREN**: Energy Efficiency and Renewable Energy Network of the U.S. Department of Energy . See User News , Vol. 16, No. 1, p. 44.
http://www.doe.gov/	**U.S. Department of Energy** . See User News , Vol. 15, No. 4, p. 1.
http://www.whitehouse.gov/	**The White House** home page contains an Interactive Citizens Handbook that lists U.S. Government servers by agency. Use this site as a jumping-off point to explore other Federal agencies. See User News , Vol. 15, No. 4, p. 1.
http://www.fedworld.gov/	**FedWorld** is the U.S. Government's Federal Information Network home page. It lists web servers, ftp, gopher, and telnet sites and is organized by subject categories.
http://www.fedworld.gov/ntis/ ntishome.html	**National Technical Information Service** NTIS is part of the U.S. Department of Commerce; it gathers and markets scientific, technical and business-related information and disseminates it electronically, on paper copy, on diskette, or on CD-ROM. NTIS has access to more than two million documents, reports, studies, computer programs, and databases; it adds an average of 1,300 titles each week. Call (703) 487-4650 for info.
http://www.caddet-ee.org	**Center for the Analysis and Dissemination of Demonstrated Energy Technologies** CADDET is an International Energy Agency program responsible for collecting and disseminating information on demonstrated, energy-efficient and renewable energy technologies. See User News , Vol. 16, No. 2, p. 23.
http://crest.org/aceee	**American Council for an Energy-Efficient Economy** ACEEE is a non-profit organization dedicated to advancing energy efficiency as a means of promoting both economic prosperity and environmental protection. See User News , Vol. 16, No. 2, p. 23.
http://www.ashrae.org	**American Society of Heating, Refrigeration and Air-Conditioning** ASHRAE is an international membership organization operated for the exclusive purpose of advancing the arts and sciences of heating, refrigeration, air conditioning and ventilation. ASHRAE sponsors research, develops standards for industry, publishes technical and scientific data, and organizes conferences and educational activities. See User News , Vol. 16, No. 3, p. 31.
http://www.cisti.nrc.ca:80/irc/ irccontents/html	**[Canadian] Institute for Research in Construction** IRC is an integral part of the National Research Council, Canada's premier science and technology agency. IRC is the leader in research, technology and innovation for the Canadian construction industry through the development of national construction codes. See User News , Vol. 16, No. 3, p. 31.
http://eicbbs.wseo.wa.gov/	**Washington State Energy Office/Energy Ideas Clearinghouse** Information and technical support for increasing energy efficiency in the commercial and industrial sectors. Clients include utility staff, engineers, facility owners and operators, consultants and other energy professionals. Up-to-date information on products and technologies; national, state, and local programs; and the environmental aspects of energy use is available at the Clearinghouse.

http://next1.mae.okstate.edu:80/ibpsa/	**International Building Performance Simulation Association** IBPSA is a not-for-profit international society of building performance simulation researchers, developers and practitioners, dedicated to improving the built environment.

* * * Featured Sites This Issue * * *

World-Wide Web and Internet Sites for Building Energy Efficiency

Washington State Energy Office/Energy Ideas Clearinghouse
http://eicbbs.wseo.wa.gov/

Established in 1990, the Energy Ideas Clearinghouse provides information and technical support for increasing energy efficiency in the commercial and industrial sectors. Clients include utility staff, engineers, facility owners and operators, consultants and other energy professionals. Up-to-date information on products and technologies; national, state, and local programs; and the environmental aspects of energy use is available at the Clearinghouse. The Clearinghouse offers two primary services: a technical assistance hotline and an electronic bulletin board. The hotline provides comprehensive and timely answers to technical questions posed by utilities and building professionals in the states served by BPA or Western Area Power Administration.

ENERGY IDEAS CLEARINGHOUSE
Washington State Energy Office
PO Box 43171
925 Plum Street SE
Olympia, WA 98504

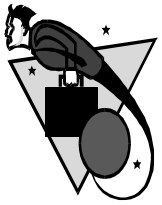
Voice: (360) 956-2237
FAX: (360) 956-2214

International Building Performance Simulation Association IBPSA
http://next1.mae.okstate.edu:80/ibpsa/

IBPSA is a not-for-profit international society of building performance simulation researchers, developers and practitioners, dedicated to improving the built environment.
IBPSA was founded to advance and promote the science of building performance simulation in order to improve the design, construction, operation and maintenance of new and existing buildings worldwide. To take a leading role in the promotion and development of building simulation technology, IBPSA aims to provide a forum for researchers, developers and practitioners to review building model developments, facilitate evaluation, encourage the use of software programs, address standardization, accelerate integration and technology transfer.

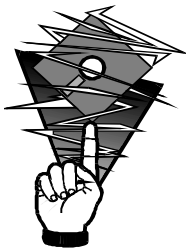
For more information, contact:
Larry Degelman
Department of Architecture
Texas A & M University
College Station, TX 77843
Tel 409 845 1221
Fax 409 845 4491

HELP WANTED - Steven Winter Associates, Inc. / Building Systems Consultants / 50 Washington Street /
Norwalk, CT 08854 / Telephone (203) 852-0110 / Fax (203) 852-0741



Engineer, HVAC 2-4 years design experience. Knowledge of energy-efficient technologies a plus. Will
train for state-of-the art energy/IAQ studies on a wide range of buildings. Contact Adrian Tuluca

Senior Research Associate for Energy Efficiency in buildings. Knowledge of computer analysis (DOE-2,
BLAST, or TRNSYS), experience as PI, writing skills. Minimum 10years (can be academic). Will
consider sabbatical. Contact Adrian Tuluca.



Call for SPARK Beta Testers

Beta testing of SPARK will begin soon. As you may know, SPARK will let you quickly build models of complex physical processes by connecting calculation modules from a library. It is aimed at simulation of innovativ e and/or complex building systems that are beyond the scope of programs like DOE-2 and BLAST. The main elements of SPARK are an interactive *graphical editor*, an *object library* containing calculation modules for building components and processes, and a *solver* for solving the set of simultaneous algebraic and differential equations that correspond to the physical problem being simulated. With the graphical editor you graphically link the objects into networks that represent a building's envelope, lighting or HVAC system. With the support of DOE, SPARK is being developed by the LBNL Simulation Research Group, California State University Fullerton and Chapman University.

SPARK differs from DOE-2 in several important respects: (1) its timestep can be as small or large as you want; (2) it uses an iterative solution and so can easily handle non-linear systems; (3) it is equation based and so can simulate arbitrarily complex systems that can be described by sets of algebraic and differential equations; and (4) its algorithms are not hard wired, which means you can easily customize it to particular simulation problems. SPARK will be initially be made available as a stand-alone program. The first release will include a library of basic HVAC components like fans, mixing boxes, heat exchangers, coils, chillers, cooling towers, and controls that you can immediately begin to assemble into complete HVAC systems. Later, SPARK will be integrated into PowerDOE and DOE-2.2, allowing you to analyze the performance of innovative HVAC systems using DOE-2-calculated loads. We will also add a library of envelope component objects, at which point you will be able to use SPARK to add innovative heat transfer models to DOE-2. You will be able to run the beta version under Unix, DOS or Microsoft Windows. However, to use the graphical editor you will need a machine that can run the X-Window operating system. Otherwise, you can use the SPARK command-line interface to define and link objects.

If you would like to be a beta tester please contact Kathy Ellington at kathy@gundog.lbl.gov or fax this page to 510-486-4089. We will contact you with more information prior to beta release.

LAWRENCE BERKELEY NATIONAL LABORATORY
Simulation Research Group 90-3147
University of California
Berkeley, CA 94720 U.S.A.

You Never Call, You Never Write P-L-E-A-S-E!!! Phone, FAX, email or drop us a note when you change your address. We use a special low mailing rate and the post office doesn't automatically forward the User News to your new address. Instead, they photocopy the back page and send it to us so we can correct our records. The newsletter itself, that precious beacon of light in the dark world of

building simulation, is discarded!